

The fundamental principle upon which the present invention is based is that of performing an ultra purification of a flow of gases or fumes containing micro pollutants. In other words, the present invention captures the micro pollutants contained in the particles of humidity that are inevitably present in the flow of gases. This is carried out by submitting the flow of gases or fumes to the action of only snowflakes that are at a temperature substantially below 0°C as specifically recited in claim 75. Snowflakes substantially below 0°C would assure the complete absence of water in a liquid state. In fact, the snowflakes substantially below 0°C would crystallize the particles of humidity and capture the micro pollutants that they contain. All this does not take place, nor could it, in the Starr reference in which the snowflakes are mixed with water drops which are certainly at a temperature above 0°C since it would not be possible to have water in a liquid state at any temperature below 0°C. Certainly, the inclusion of the water drops in the Starr chamber would inhibit the crystallization of the humidity present in the flow of gases or fumes containing micro pollutants, thereby making it more difficult to capture these micro pollutants.

It is important to point out that the teachings of the Starr reference are contrary to the teachings of the present invention. In fact, the Starr reference washes the gases or fumes with the use of water and, in order to render the wash more effective, it carries it out with cold water, which is more dense. While it is clear that the cooling of the water can lead to the creation of snowflakes, these snowflakes do not exclude the presence of water in the liquid state necessary for carrying out the washing process. As specifically recited in claim 75, the water is cooled to a temperature substantially below 0°C in contradistinction to the process described in the Starr reference.

The present invention does not carry out any kind of wash since the wash would not be able to eliminate the micro pollutants, but would capture them crystallizing the particles of humidity containing them. Therefore, the Starr reference must utilize water which, in the presence of snowflakes, saturates them thereby rising the temperature above 0°C and rendering them incapable of crystallizing the particles of humidity dragged by the flow of gases or fumes and containing micro pollutants.

On the other hand, unlike the Starr reference, which teaches to submit a flow of gases or fumes to a wash in order to reduce the pollutants, the present invention teaches the step of removing the micro pollutants from a flow of gas or fumes which is already devoid of pollutants. These pollutants had already been removed upstream by a washing process, which for instance, may be carried out in the wash chamber shown in the present patent application.

It is important to keep in mind that if a flow of gases or fumes and humidity containing micro pollutants, at a certain temperature and a certain pressure, should collide a flow of washing water (even if the water is mixed with snowflakes), it certainly would not be able to reduce the humidity of the entering flow of gases or fumes to capture the micro pollutants therein contained. As a consequence, the outgoing flow would still have that degree of humidity, as well as the micro pollutants present in the incoming flow.

To capture those micro pollutants, it would be necessary to subject the flow of gases or fumes with a flow of only snowflakes, at a temperature that insures the crystallization of the humidity containing the micro pollutants and so then capturing by the snowflakes themselves. The temperature must necessarily be substantially below 0°C as specifically recited on page 4, line 3 of the present specification. This would not be possible in the Starr reference, in which the particles of ice which may be present in the washing water must be at a temperature greater than 0°C, and could never crystallize the particles of humidity containing the micro pollutants.

In actuality, the Starr reference removes the pollutants which are external to the particles of humidity, by a washing process. This is in contradistinction to the present invention which removes the micro pollutants contained in the particles of humidity by means of the particles themselves by crystallization.

It is submitted that although the Haruch reference does produce snowflakes, its combination with the Starr reference would not produce the invention as recited in claim 75 since, as previously indicated, the temperature in the Starr reference is greater than 0°C and not substantially below 0°C as specifically recited in claim 75.

Therefore, it is submitted that the present invention as recited in claim 75 and all of the claims depending directly or indirectly therefrom, recite the invention in a patentable manner. Reconsideration and allowance of all of the claims present in the application should be allowed.

Respectfully submitted,

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